DIESEL RETROFIT PROGRAM

Proposed Refuse Removal Vehicle Rule

June 2001

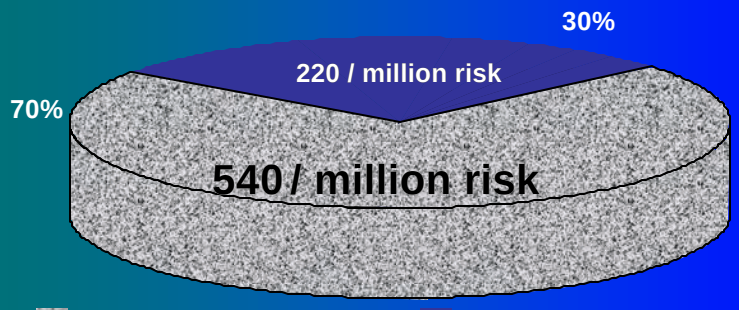
California Environmental Protection Agency

Air Resources Board

Presentation Outline

- Why a Rule?
- The Rule
- Technological Feasibility
- Cost
- Fuel Availability

70% of Air Toxic Risk is From Diesels



Diesel PM (70%)

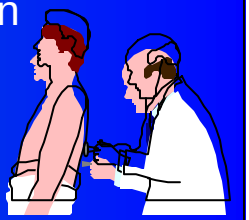
Other Air Toxics (30%)

1,3 Butadiene (10%)
Benzene(8%)
Carbon Tetrachloride (4%)
Formaldehyde (3%)
Hexavalent Chromium (2%)
All Others (3%)

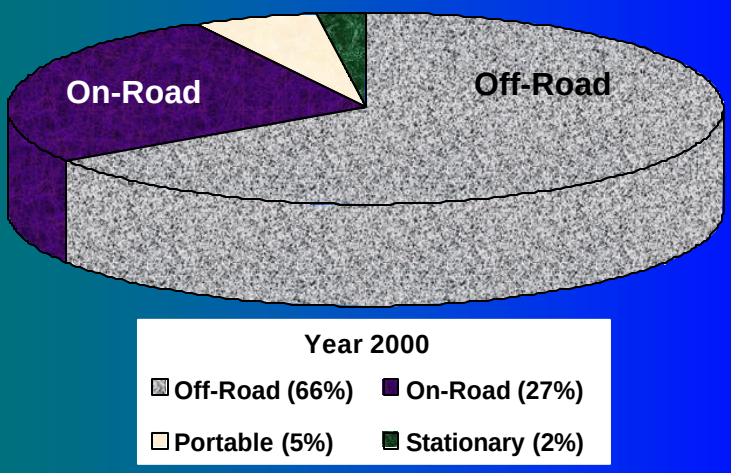
Diesel PM as a Toxic Air Contaminant

PARTICULATE MATTER

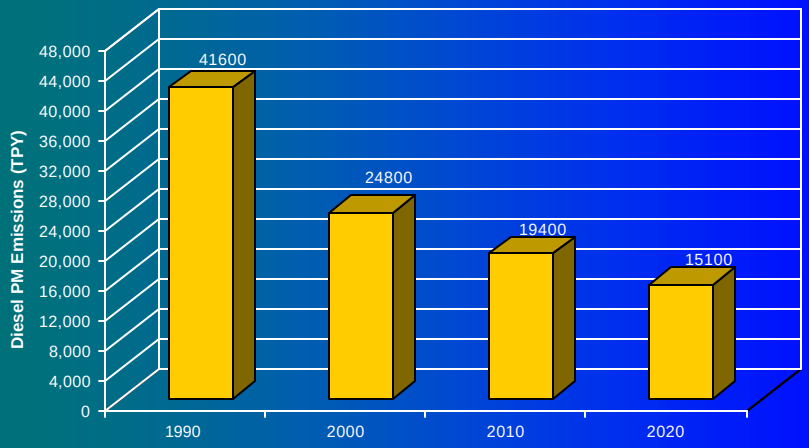
- Increases Lung Cancer
- Increases Asthma Attacks
- Aggravates Bronchitis
- Contributes to Premature Death in Those with Existing Heart & Lung Disease



98% of Diesel PM is Emitted by Mobile Sources



Diesel PM Emissions Trend Under Current Program



Diesel Risk Reduction Plan (DRRP)

- Reduce Emissions from New Engines
- Ensure In-use Emission Performance
- Provide Low Sulfur Fuel (<15ppm) to Enable Aftertreatment Technology
- ***Require Retrofit of Existing Engines***

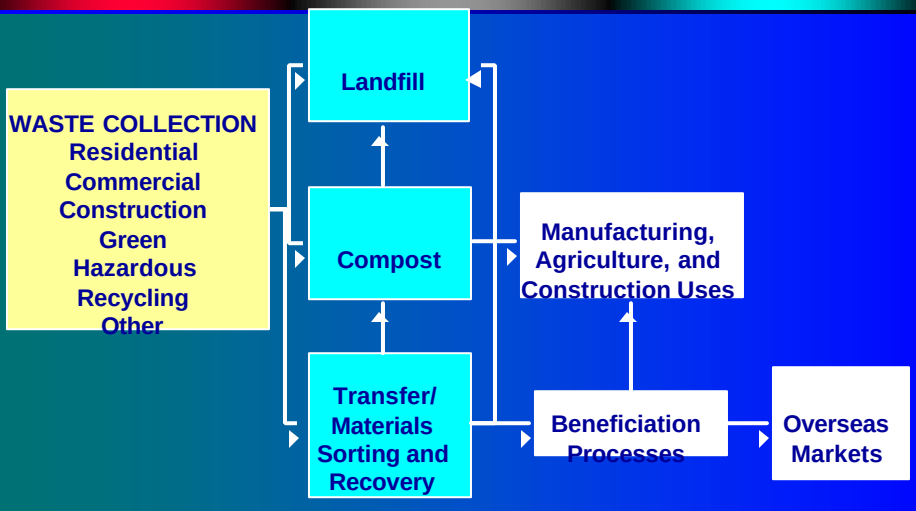
Mobile Diesel PM Retrofit Rules

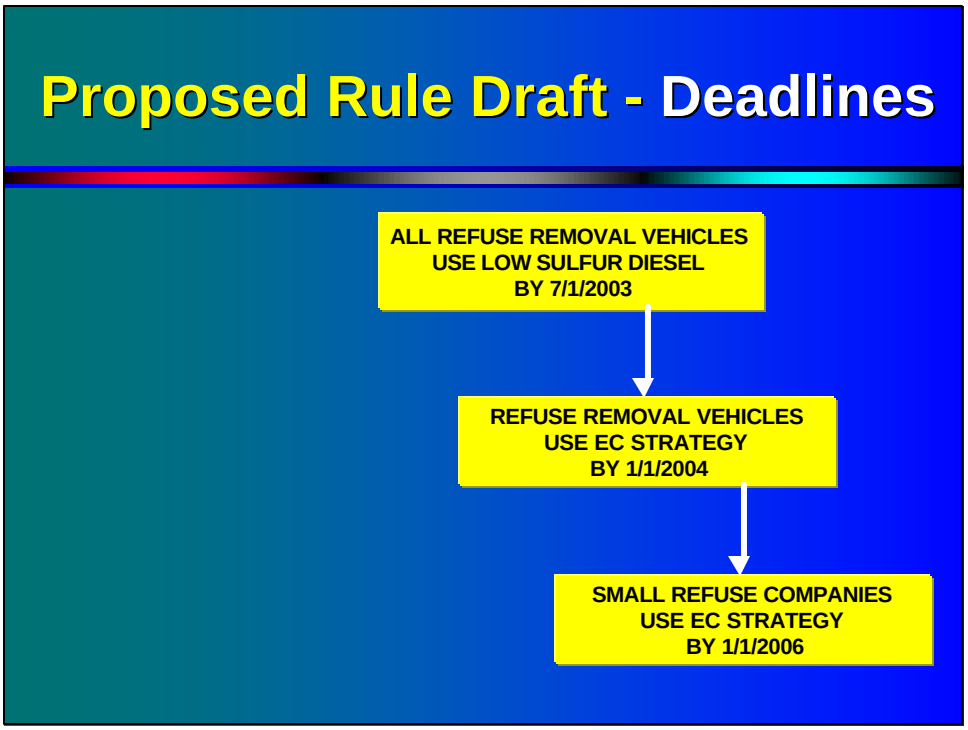
- Public Transit Bus Fleets (Feb. 2000)
- Refuse Removal Vehicles (Dec. 2001)
- Fuel Tanker Trucks (2002)
- Remaining on- and off-road heavy-duty diesel fleets (2003+)

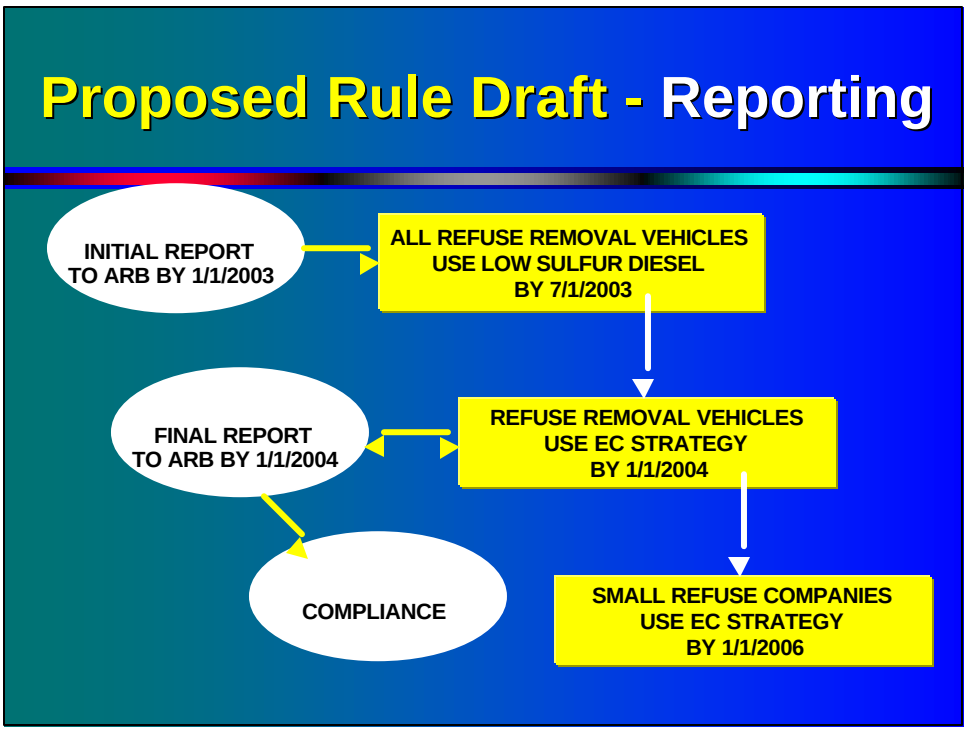
Proposed Rule Draft - Scope

- Definition of “refuse removal vehicle”
  - HDDE on HDDV in solid waste management
  - on-road HDDV greater than 14,000 lbs. GVWR
  - ALL vehicles involved in the process of solid waste management will qualify

Refuse Removal Process




Proposed Rule Draft - Deadlines
ALL REFUSE REMOVAL VEHICLES
USE LOW SULFUR DIESEL
BY 7/1/2003
REFUSE REMOVAL VEHICLES
USE EC STRATEGY
BY 1/1/2004
SMALL REFUSE COMPANIES
USE EC STRATEGY
BY 1/1/2006


Proposed Rule Draft - Reporting
INITIAL REPORT
TO ARB BY 1/1/2003
ALL REFUSE REMOVAL VEHICLES
USE LOW SULFUR DIESEL
BY 7/1/2003
FINAL REPORT
TO ARB BY 1/1/2004
REFUSE REMOVAL VEHICLES
USE EC STRATEGY
BY 1/1/2004
COMPLIANCE
SMALL REFUSE COMPANIES
USE EC STRATEGY
BY 1/1/2006

Proposed Rule Draft - Exemptions

- Exemptions
  - Emission control system (ECS) unavailability
    - One year delay
  - Engine retirement
    - Exempt from the exhaust standards

Technological Feasibility

- Verification Procedure
- Refuse Removal Vehicle Inventory

Verification of Retrofit Devices

- PM emission reductions ≥ 85% or PM levels of ≤ 0.01 g/bhp-hr
- Emission reduction claims are accurate
- Devices are:
  - Durable
  - System compatible
  - Fuel compatible

Verification: Current Status

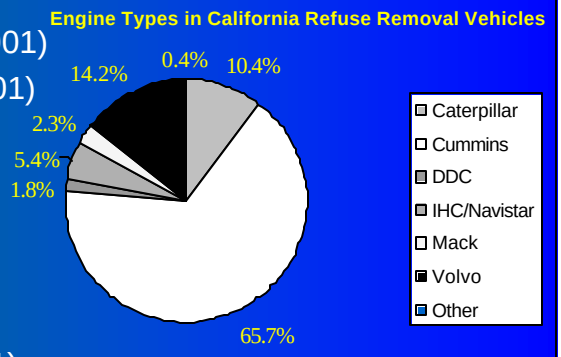
- Several manufacturers have applied
- No ECS verified yet
- First verification expected late summer/early fall

Minimum Defects Warranty

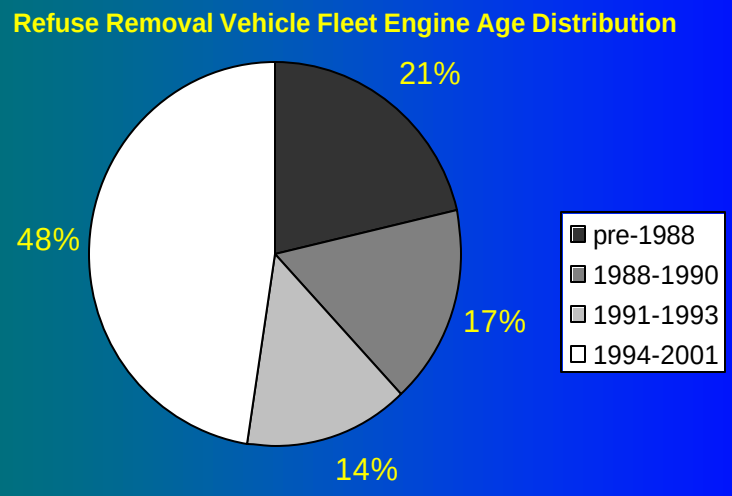
Engine	Years	Miles
Light heavy-duty, 70 to 170 hp, less than 19,500 lbs. GVWR	4	40,000
Medium heavy-duty, 170-250 hp, GVWR 19,500 – 33,000 lbs.	4	65,000
Heavy heavy-duty, over 250 hp, greater than 33,000 lbs. GVWR	4	100,000

Engine Survey

- Mfr. & Model Years
  - Caterpillar (1970-2001)
  - Cummins (1976-2001)
  - DDC (1966-2000)
  - Ford (1989-2000)
  - GMC (1991)
  - Isuzu (1990-2000)
  - Mack (1978-1990)
  - Navistar (1981-2001)



Engine Survey



Retrofit Probability Comparison

- Newer engines have higher probability of successful retrofits
- Older engines need more R&D
- Missing engine manufacturer, model, and model year has been sent to MECA

Additional Data Collection

- Demonstration Programs
  - LA City Sanitation - 15 trash trucks
    - 1998 model year vehicles passing the test!
- ARB Study
  - Other refuse hauler demonstrations
    - To test older vehicles
  - In-depth engine survey for pre-1991 model year engines

Cost of ECS

- Emission Control System (ECS) - est'd $3000 - $5500
- Maintenance - yearly cleaning of the ECS
- Disposal fee
- Low sulfur diesel fuel (LSD) - est'd about $0.05/gal incremental cost

Fuel Availability

- Suppliers
  - BP
  - Equilon
  - Tosco
  - Ultramar
- Supply
  - Sufficient for demand
- Infrastructure
  - Until the 2006 rule, no pipeline
  - Truck delivery

Regulation Plans

- Workshops
  - Public comment ends July 19, 2001
- Staff report and proposed rule
  - October 26, 2001
- Board Hearing:
  - December 13 – 14, 2001

www.arb.ca.gov/diesel/dieselrrp.htm

Comments Encouraged

- Scope
- Applicability
- Timeline

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